ACUTE POLIOMYELITIS IN CALIFORNIA.

By F. F. GUNDRUM, M. D., Sacramento.

In a previous paper [1] it was shown that acute poliomyelitis has been occurring in California for many years, both as sporadic cases and in occasional epidemics. These epidemics have been usually small, but within the past few years the numbers attacked have greatly increased. No further authentic accounts have been obtained of past outbreaks except one group of two cases near Bodega Bay, Marin County, in April, 1888. It is the purpose of this communication to record the history of poliomyelitis in California during the past three years. It has not been possible, for various reasons, to obtain completed records of all cases reported by health officers, and on this account only part of the cases are available for analysis.

The reports at the office of the State Board of Health for the years 1910, 1911, 1912 were collected and the data tabulated as follows:

1. Portion of the year when most cases occurred.

2. Sex.

3. Age. i. e., over or under 8 years. (Arbitrarily chosen upon a former occasion.)

4. Exposure. (Any direct or reasonably close indirect contact with a known case.)

5. Onset. There has been reported in almost all cases types of onset which can comparatively easily be grouped into one of two divisions.

1. The so-called classical or gastro-intestinal type in which the intestinal symptoms such as nausea, vomiting, constipation, diarrhea, etc., seem to predominate clinically until the appearance of the paralysis.

2. The meningeal type where retraction of the head and other phenomena seem to point toward some meningeal irritation. A few reports showed the onset to have been so mild as almost or quite to have escaped notice. Just why those two above mentioned types of onset should have so greatly outnumbered other well recognized though less frequent ones is difficult to explain. It may not be impossible, that the blank forms sent out lent themselves too facilely to the remembering and recording of some symptoms and to the forgetting of others.* At any rate, practically all, without any apparent distortion, can be brought into one of these two groups and this accordingly has been done.

Symptoms of Acute Stage.

*Fever: High. Moderate. Slight. None.
Headache: Severe. Moderate. Slight. None.
Constipation. Diarrhoea. Vomiting. Sore throat.
Pain: Distribution.
Tenderness: Distribution.
Retraction of head: Restlessness. Drowsiness.

6. Paralysis: The distribution rather roughly grouped as to whether affecting upper or lower extremities, or respiratory muscles. The exact muscles paralyzed and the extent, etc., of the palsy is of chief interest to the orthopedist whose ingenuity is called upon later to substitute or restore as much as he can.

7. Result: All patients having no paralysis at all or none remaining at the time of filling out blanks were classed as abortive. The other groups recorded under this heading are self-explanatory.

8. Contacts: Persons who were in close association with sufferers from the disease during the acute stages. On account of the greater frequency in children and therefore assumed greater susceptibility, contacts were divided according to age, those under 18 being classified as children.

9. Outline maps of the state showing localities in which poliomyelitis has occurred during each of the past three years.

1910.

Total cases reported.....139
Total deaths reported..... 9
Percentage mortality..... 6
Total cases available for analysis.....120
(1) Maximum of Cases:
May 1st to September 1st..... 71%
(2) Sex. Males.....76 or 63%
Females .....44 or 37%
(3) Age. Under 8 years.....85 or 71%
(4) Exposure ..... 5 or 4.1%
(5) Onset. Classical.....80 or 67%
Meningeal .....40 or 33%
(6) Paralysis:
Upper extremities.....Cases 27
Lower extremities.....Cases 93
Respiration .....Cases 7
(7) Result:
Paralyzed 113
Dead 7
(8) Contacts:
Adults 113
Children 113
Percentage of secondary cases known to contacts:
Adults 0%
Children 4.4%

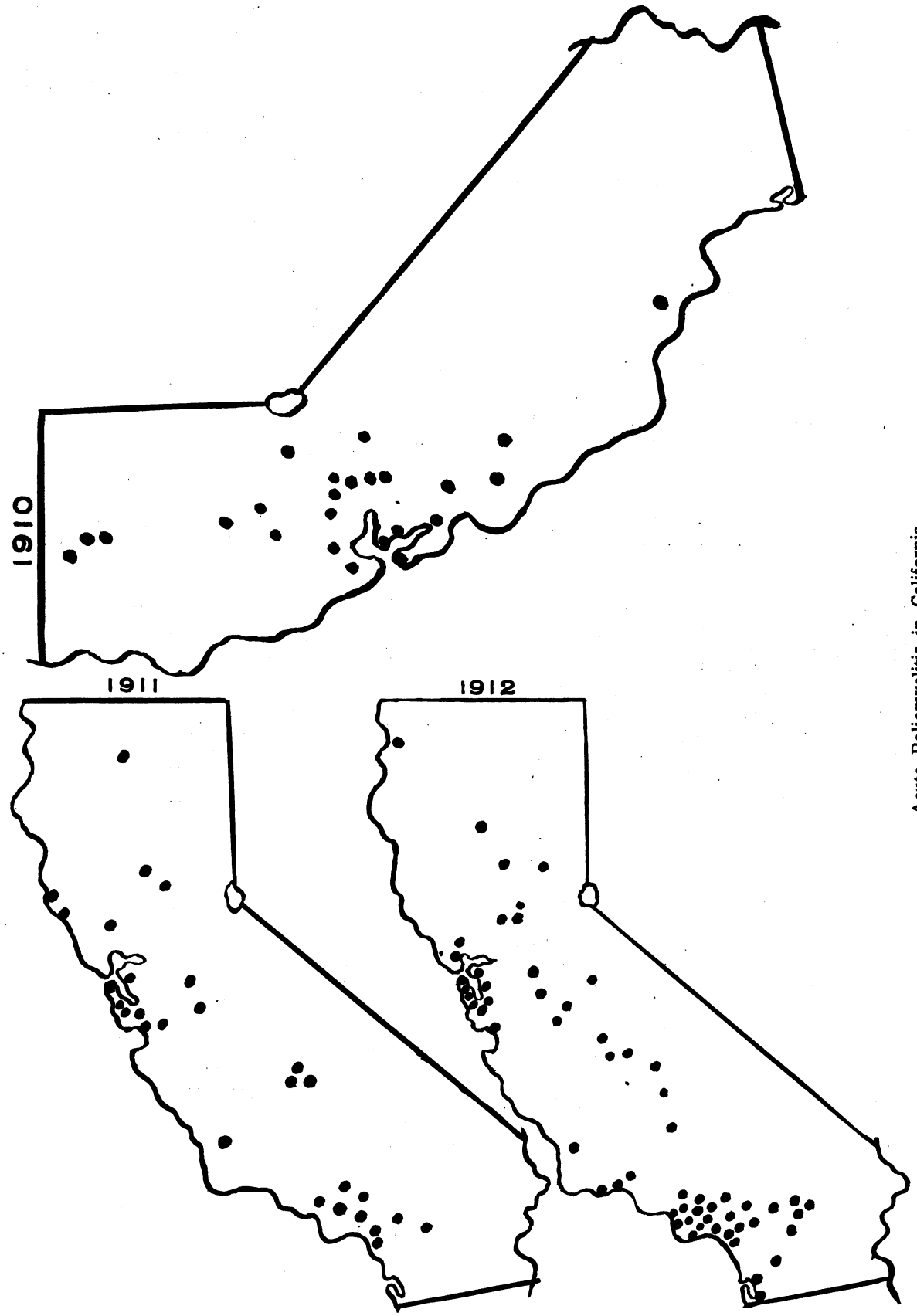
1911.

Total cases reported.....55
Total deaths.....13
Mortality rate.....24%
Cases available for analysis.....29
(1) Maximum of cases:
Oct. 31st to Dec. 31st..... 88%
(2) Sex. Males.....10 or 34%
Females .....17 or 59%
Sex not recorded..... 2 or 7%
(3) Age. Under 8 years.....21 or 72%
(4) Exposure—1 case or.....3.4%
(5) Onset. Classical..... 8
Meningeal 6
Not recorded.....15
(6) Paralysis:
Upper extremities..... 2
Lower extremities..... 5
Respiration 4
Face 2
Not recorded.....16
(7) Result:
Paralyzed 7
Abortive 3
Dead 13
Not recorded..... 4
(8) Contacts:
Adults 22
Children 15
Proportion of known secondary cases to known contacts:
Adults 0%
Children 3.4%

The records of this year are so imperfect as to make percentage computations almost valueless.

1912.

Total cases reported.....531
Total deaths.....129
Mortality rate..... 24%
Cases available for study.....354



Acute Poliomyelitis in California.

(1) Maximum incidence:
June 1st to Oct. 21st.....259 or 80%
(2) Sex. Males.....190 or 54%
Females .....159 or 44%
(3) Age. Under 8 years.....277 or 78%
(4) Exposed:
Yes ..... 43 or 12%
No .....227 or 64%
Not recorded..... 84 or 23%
(5) Onset:
Classical .....151 or 43%
Meningeal .....108 or 30%
Not recorded..... 95 or 27%
(6) Paralysis:
Upper extremities..... 61 or 18%
Lower extremities.....132 or 38%
Respiration ..... 68 or 20%
Abortive ..... 41 or 12%
Not recorded..... 42 or 12%
(7) Result:
Paralyzed .....172 or 49%
Dead ..... 129 or 24%
Abortive ..... 51 or 14%
(8) Contacts:
Adults 601
Children 401
Proportion of known secondary cases to contacts.
Adults 1.6%
Children 8%

The proportion of known exposures to known cases in children and adults correspond, however, more closely to the cases reported than these figures would seem to indicate, i. e., 78% of all cases were under 8 years of age: of 43 cases of known exposure, 32 or 77% were children. The greater per cent. of known exposure in children may also be due to the relatively more easily obtained knowledge of contacts. There is a definitely greater percentage of known secondary cases among children shown by the data of all three years. This fact favors assumption of a greater susceptibility to the disease among children.

Total for Three Years.

Total cases reported.....706
Total deaths.....151
Mortality rate..... 21%
Cases available for analysis.....503
(1) Maximum Incidence:
May 1st to Oct. 1st..... 72%
(2) Sex. Males.....276 or 53%
Females .....220 or 44%
Not recorded.....7
(3) Age. Under 8 years.....363 or 72%
(4) Exposure .....49 or 9.7%
(5) Onset:
Meningeal .....154 or 30%
Classical .....239 or 47%
Not recorded.....111
(6) Paralysis:
Upper extremities.....189 or 37%
Lower extremities.....230 or 43%
Respiration ..... 72 or 14%
(7) Result:
Paralyzed ..... 292 or 56%
Dead .....149 or 26%
Abortive ..... 44 or 9%
Not recorded..... 46 or 9%
(8) Contacts:
Adults 736
Children 539
Proportion of known secondary cases to known contacts:
Adults (over 18).....1.3%
Children (under 18).....7.2%

During 1912, there appeared papers,[2 3] reporting successful transmission of poliomyelitis through the agency of the biting fly, *Stomoxys Calcitrans*. Following this, special efforts were made throughout the last few months of the year to record, if possible, the presence or absence of this fly in the immediate neighborhood of individuals ill with poliomyelitis. The majority of these observations were made in the valley of the Sacramento river, a valley of farms and dairies having a large population of domestic animals. In every case it was a matter of comparative ease to find numerous specimens of stomoxys.

CONCLUSIONS.

1. Poliomyelitis is more prevalent in summer but is by no means confined to hot weather, instances of this disease having occurred at all seasons.

2. Children are more apt to contract the disease after known exposure than adults.

3. Exposure could be demonstrated in only one case in ten.

4. The onset is rather more apt to present gastro-intestinal symptoms than meningeal.

5. The spreading of the virus through a community is in the majority of cases untraced. This distribution can be explained only through the assumption of unsuspected carriers, probably human, possibly insect or animal.

In closing, I wish to express my indebtedness to Dr. W. F. Snow, Secretary of the State Board of Health, for access to the records and for constant interest in following up the disease in California.

1 Gundrum, Jour. A. M. Med. Assn., Jan. 27, 1912. Vol. LVIII, pp. 254-55.
2 Rosenau, M. J. XVth International Congress of Hygiene and Demography, September 26th, 1912.
3 Anderson, J. F. Public Health Reports; U. S. P. H. Service; Vol. XXVII, No. 41, p. 1733, Oct. 25th, 1912.

"IMPRESSIONS."*

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The practice of medicine is certainly interesting and fascinating for many reasons; to myself the fact that we in our daily work can make the most interesting scientific observations and researches, has always been especially attractive.

On the other side, no work of any kind taxes and racks the nerves of a person more than the practice of medicine. It is not only the great responsibility of our decisions, often involving life and death, health and happiness, which makes our position difficult; but what has always appealed most to me is the fact that in our daily work we are made not merely witnesses, but active participants, in the greatest tragedies of life. When priest or undertaker steps in, death has done its work, they stand before an accomplished fact; but we physicians are right in the battle line for life; we, if we have any heart at all, cannot entirely escape the anxiety, worry, disappointment and despair so often accompanying the struggle for life.

At times the measure of our endurance becomes full, and then the only thing for us to do is to

*Read before the San Francisco Polyclinic Society, April, 1913.